



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,035	12/16/2005	Hiroyuki Hanai	046124-5441	4009
55694	7590	09/20/2006		EXAMINER
DRINKER BIDDLE & REATH (DC)				MONBLEAU, DAVIENNE N
1500 K STREET, N.W.				
SUITE 1100			ART UNIT	PAPER NUMBER
WASHINGTON, DC 20005-1209				2878

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/561,035	HANAI, ET AL.	
	Examiner	Art Unit	
	Davienne Monbleau	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 16 December 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1 and 2 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 16 December 2005 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/16/05.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Information Disclosure Statement

The IDS filed on 12/16/05 has been acknowledged and a signed copy of the PTO-1449 is attached herein.

Title

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Electron Multiplier with Venetian and Metal-Channel Dynode Structure.

Claim Objections

Claim 2, line 4: change "dynodes" to -- dynodes -- .

There is insufficient antecedent basis for the following limitations:

Claim 1 recites the limitation "the first stage" in line 3.

Claim 1 recites the limitation "the second stage" in line 4.

Claim 2 recites the limitation "the secondary electrons" in line 2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (U.S. 5,481,158) in view of Shimoi et al. (U.S. 5,936,348).

Regarding claim 1, *Kato* teaches (Figure 11, column 6, lines 1-13) an electron multiplier comprising a dynode unit (46), in which a plurality of dynodes are positioned in a layered state in multiple stages, wherein in the dynode unit (46), the dynode of the first stage (47) is arranged as a venetian blind dynode and the dynodes of the second stage onward are arranged as a different type of dynodes. *Kato* does not teach that the dynodes of the second stage are metal channel dynodes. *Shimoi* teaches (Figure 2) an electron multiplier comprising a plurality of stacked metal channel dynodes (9). It would have been obvious to one of ordinary skill in the art at the time of the invention to use metal channel dynodes in *Kato*, as taught by *Shimoi*, to provide efficient electron multiplication for a photomultiplier tube while suppressing crosstalk and improving uniformity. (See *Shimoi*, column 2, lines 19-24).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Shimoi, as applied to claim 1 above, and in further view of Ohmura et al. (U.S. 5,616,987).

Regarding claim 2, *Kato as modified by Shimoi* teaches (*Kato, Figure 11*) an auxiliary electrode (9) that guide photoelectrons to the first dynode stage (47), but does not teach an auxiliary electrode between the first and second dynode stages. *Ohmura* teaches (column 9, line

62 to column 10, line 24) an electron multiplier comprising an auxiliary electrode that guides secondary electrons, emitted by the first dynode, toward the second dynode. It would have been obvious to one of ordinary skill in the art at the time of the invention to use an auxiliary electrode between the first dynode stage and second dynode stage in *Kato as modified by Shimoi*, as taught by *Ohumra*, to uniformly control electrons emitted from the entire region of the first dynode stage to travel toward the second dynode stage. (See *Ohumra*, column 10, lines 17-24).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure because they teach various electron multiplier configurations comprising Venetian blind dynodes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 571-272-1945. The examiner can normally be reached on Monday through Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Darienne Monbleau

DNM